

REMARKS

Claims 1-3, 6-7, 9 and 11 have been rejected by the Examiner under 35 USC 103(a) as being unpatentable over US 6,617,409 to Yukawa et al. in view of US 4,931,505 to Miyazaki et al. Claim 4 has been rejected by the Examiner under 35 USC 103(a) as being unpatentable over the combined teaching of Yukawa and Miyazaki and further in view of US 6,489,396B2 to Nakamura et al. Claim 5 has been rejected by the Examiner under 35 USC 103(a) as being unpatentable over the combined teaching of Yukawa and Miyazaki and further in view of US 5,216,081 to Mohri et al. Also, claims 8 and 10 have been rejected by the Examiner under 35 USC 103(a) as being unpatentable over the combined teaching of Yukawa and Miyazaki, and further in view of US 1,941,398 to Iliff et al. These rejections are respectfully traversed.

The present invention is directed to a flake pigment provided with a coating made of a resin composition containing a copolymer comprising a bond unit from a fluorine polymerizable monomer having alkyl fluoride groups and a bond unit arising from a polymerizable monomer having phosphate groups. The flake pigment is used in paint for providing the paint with high brightness. Thus, the flake pigment of the present invention is useable in a powder paint for supplying a film with excellent metallic properties, high brightness and excellent secondary adhesiveness.

As recited in the claims of the present application, the flake particles are provided with a single-layer or double-layer coat which covers the surface of the flake particles wherein at least one layer of said single-layer or double-layer coat is made of a resin composition containing a copolymer comprising a bond unit arising from a fluorine polymerizable monomer having alkyl fluoride groups and a bond unit arising from a polymerizable monomer having phosphate groups, said copolymer being soluble in a solvent due to its molecular structure and wherein all of the alkyl fluoride groups and all of the phosphate groups are present in separate side chains of the copolymer. Thus, since all of the alkyl fluoride groups and all of the phosphate groups are

contained in different bond units, respectively, they are present in independent respective side chains in the copolymer.

The Examiner, recognizing that all of the previous prior art relied upon did not recognize that all of the alkyl fluoride groups and all of the phosphate groups are present in independent respective side chains of the copolymer, has further relied upon the Miyazaki patent, the Examiner stating that the copolymer disclosed therein is water soluble and that the fluorine and phosphoric groups are in separate side chains. It is the Applicants' position that the copolymer as disclosed in the Miyazaki patent is fundamentally different from that of the present invention.

In Col. 6, line 67 to Col. 7, line 5, the Miyazaki reference discloses the function of its copolymer (B). Thus, the Miyazaki reference states that it is considered that when the coating layer is in a dried state, it presents a water repellant surface by virtue of the polyfluorocarbon chain, but when exposed with a large amount of water, the polyfluorocarbon chain withdraws from the surface and the hydrophilic groups transfer to the surface, whereby the surface becomes hydrophilic. Therefore, in the copolymer (B) of the Miyazaki reference, as the "hydrophilic group" or the "polyfluorocarbon chain" reversibly transfers to or withdraws from the surface of the coating layer, in accordance with the environment, it appears that the copolymer (B) of the Miyazaki reference is present in such a state that it is not absorbed to other substances. In contrast, as the specific resin of the Yukawa reference is characterized by excellent adsorption property to the surface of the metallic pigment, there would be no motivation to replace the resin of the Yukawa reference with the copolymer (B) of the Miyazaki reference. Rather, in consideration of the fact that the copolymer (B) of the Miyazaki reference is not adsorbed into other substances, replacement of the resin of the Yukawa reference with the copolymer (B) of the Miyazaki reference would clearly be discouraged. Accordingly, since it would be undesirable to combine the teachings of the Miyazaki reference with that of the Yukawa reference, it is believed that the present invention would not be obvious by combining the teachings of the respective references as suggested by the Examiner.

The "alkyl fluoride groups" in the copolymer according to the present invention have the function to float the flake pigment to which this copolymer is adsorbed on the surface of the film through the inferior affinity thereof with respect to other substances (please see page 12, lines 1-6 of the present application), and the "phosphate groups" have the function to absorb the copolymer to the flake particles through excellent adsorbability thereof (please see page 13, lines 1-3 of the present application). Thus, the alkyl fluoride group in the copolymer molecule structure in the present invention plays a role of floating the flake pigment to which this copolymer is adsorbed on the surface of the film through the inferior affinity of the alkyl fluoride group with respect to other substances. According to this effect, the flake pigment can be arranged in parallel with the substrate for obtained excellent metallicity. On the other hand, the phosphate group in the copolymer molecule structure in the present invention plays a roll of adsorbing this copolymer to the flake particles to achieve excellent adsorbility of the phosphate group. Accordingly, as the copolymer according to the present invention is adsorbed to other substances (flake particles), the copolymer is fundamentally different from the copolymer (B) of the Miyazaki reference.

Since the Nakamura, Mohri and Iliff references do not fill the deficiencies of the Yukawa and Miyazaki references, for all of the reasons set forth hereinabove, it is believed that claims 1-11 are patentably distinguishable over all of the references relied upon by the Examiner, either alone or in combination.

Accordingly, in view of the above remarks, reconsideration of the rejections and allowance of all of the claims of the present application are respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Joseph A. Kolasch, Reg. No. 22,463, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By 

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